Multifunctional Lightweight Structural Materials/Advanced Radiation Shielding

Completed Technology Project (2016 - 2017)

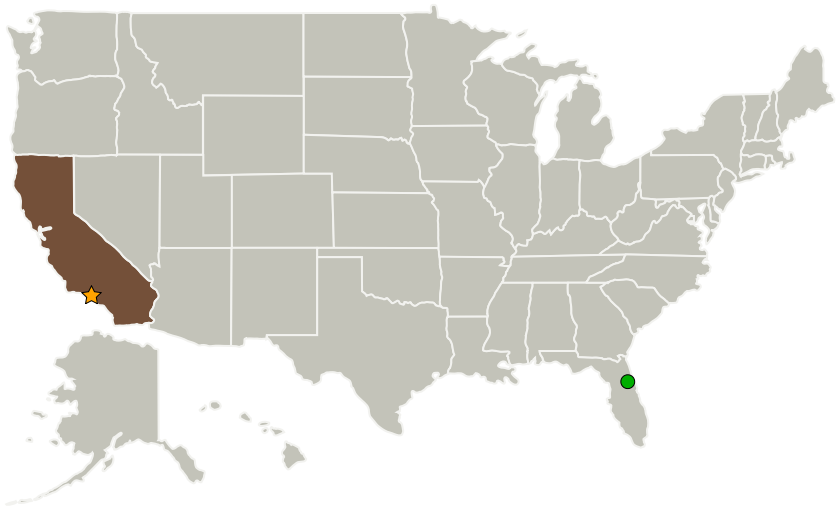
Project Introduction

The team will a) survey hydrogen rich hydrides and computational analysis of GCR shielding. This will allow determination of the best hydride material for study and project GCR shielding; b) incorporation of selected hydride into hollow truss structures which will result in successful incorporation of hydride materials into the structure; c) determine the effectiveness of hydride reinforced materials for MMOD shielding vs. bare hollow trusses that will result in reinforced materials that provide significantly improved shielding.

Anticipated Benefits

Develop a hollow multifunctional stereolithographic printed/plated materials with high hydrogen content hydrides for lightweight structural reinforcement against MMOD and radiation shielding against galactic cosmic rays.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Center Innovation Fund: JPL CIF

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Organizations Performing Work	Role	Type	Location
Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Department of Energy(DoE)	Supporting Organization	US Government	Washington, District of Columbia
Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

Primary U.S. Work Locations
California

Project Management

Program Director:

Michael R Lapointe

Program Manager:

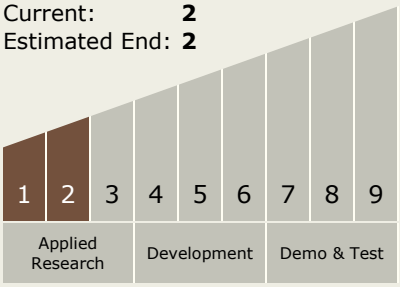
Fred Y Hadaegh

Principal Investigator:

Sabah K Bux

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.5 Radiation
    - TX06.5.3 Protection Systems

Target Destinations

Earth, Foundational Knowledge